Infectious Pancreatic Necrosis Virus Distribution and Estimated Prevalence in Wild Fish from Scotland

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INTRODUCTION
Infectious pancreatic necrosis (IPN) is the most economically important viral disease of the salmonid aquaculture industry in Europe.

FACTS ABOUT IPN
- Caused by an aquabirnavirus
- Wide host range – trout, salmon, char, halibut, cod
- Mortality in farmed salmon and trout
- Disease only observed in farmed fish
- High mortality – up to 50% farm stock

CONCERN FOR WILD FISH
Wild Atlantic salmon and trout are an important part of Scotland’s natural heritage. Against a background of increasing prevalence in farms, we aimed to determine the potential for spill over of IPN virus from infected farms and for wild fish to be reservoirs for farm infections.

Investigations in wild salmon and trout from freshwater
7553 fish tested for IPNV by virus isolation from kidneys.

Investigation in wild marine fish species
Location of wild fish capture

Wild species carriers of IPNV
Salmo salar (_salmo salar)_
Common dab (_Limanda limanda_)
Plaice (_Pleuronectes platessa_)

Prevalence of IPNV in wild freshwater fish
Increased prevalence of IPNV infection in farms was not associated with increased prevalence in wild freshwater salmon and trout.

Prevalence was generally low but increased close to salmon farms affected by IPN.

Increased prevalence persists for a period of at least a year and may decline with time although the regression is not statistically significant probably due to insufficient data (regression is -0.026% per month (+0.023% to -0.075%), 95% confidence intervals). The initial value of the regression line at 1 June is 0.985% prevalence.

Virus titres in wild fish were several orders of magnitude lower in comparison to farmed fish.

IPN virus from farmed and wild fish were very similar genetically (97-100%).

Benthic, bottom-dwelling wild fish species were more likely to be infected than wild fish living in the demersal and pelagic higher waters.

CONCLUSIONS
At a large scale, there is no evidence for IPN virus from farms having an effect on prevalence of infection in wild fish.

At a local scale, there is evidence that IPN affected marine salmon farms may have a small effect on IPN virus prevalence in wild fish. This effect may be short lived with no evidence that increased prevalence can be maintained by transmission within wild fish populations.

Prevalence of IPN in wild fish is low and no IPN diseased wild fish have been seen or reported. This makes studies in wild fish resource intensive and strongly indicates that IPN has little or no effect on wild fish.

Models of the transmission of IPN virus at the salmon farm level (Murray and Raynard 2006) show that wild fish reservoirs are not important for infection of marine farms. The timescale for transmission from wild fish to salmon may be the period of the production cycle from hatching to stocking and transmission being due to live fish movements and neighbouring infected farms.

Reference